MTM86628

Silicon P-channel MOS FET (FET)
Silicon epitaxial planar type (SBD)

For DC-DC converter
For switching circuits

■ Overview

MTM86628 is the composite MOS FET (P-channel MOS FET and Schottky Barrier Diode) that is highly suitable for DC-DC converter and other switching circuits.

■ Features

- Built-in schottky barrier diode: V_R = 15 V, I_F = 700 mA
- Low on-resistance: R_{on} = 300 mΩ (V_{GS} = –4.0 V)
- Low short-circuit input capacitance (Common source): C_{iss} = 80 pF
- Small surface mounting halogen-free package: WSSMini6-F1 (1.6 mm × 1.6 mm × 0.5 mm)

■ Absolute Maximum Ratings T_a = 25°C

Parameter		Symbol	Rating	Unit
FET	Drain-source surrender voltage	V_{DSS}	–20	V
	Gate-source surrender voltage	V_{GSS}	±12	V
	Drain current	I_D	–1.0	A
	Peak drain current *1	I_{DP}	–4.0	A
	Channel temperature	T_{ch}	150	°C
	Storage temperature	T_{stg}	–55 to +150	°C
	Total power dissipation	P_{D1} *2	540	mW
		P_{D2} *3	150	mW
SBD	Reverse voltage	V_R	15	V
	Forward current (Average)	$I_{F(AV)}$	700	mA
	Junction temperature	T_j	125	°C
	Storage temperature	T_{stg}	–55 to +125	°C

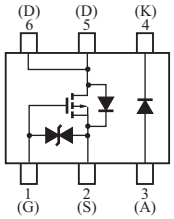
Note) *1: t = 10 μs, Duty Cycle < 1%
*2: Glass epoxy board: 25.4 mm × 25.4 mm × 0.8 mm
Copper foil of the drain portion should have a area of 300 mm^2 or more
*3: Stand-alone (without the board)

■ Package

- Code
  WSSMini6-F1
- Pin Name
  1: Gate
  2: Source
  3: Anode
  4: Cathode
  5: Drain
  6: Drain

■ Marking Symbol: PL

■ Internal Connection



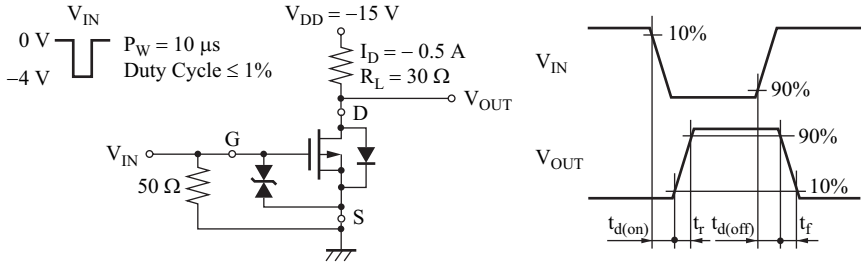
■ Electrical Characteristics $T_a = 25°C \pm 3°C$

• FET

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-source surrender voltage	V_{DSS}	$I_D = -1.0$ mA, $V_{GS} = 0$	–20			V
Drain-source cutoff current	I_{DSS}	$V_{DS} = -20$ V, $V_{GS} = 0$			–1.0	μA
Gate-source cutoff current	I_{GSS}	$V_{GS} = \pm 10$ V, $V_{DS} = 0$			±10	μA
Gate threshold voltage	V_{TH}	$I_D = -1.0$ mA, $V_{DS} = -10$ V	– 0.45	–1.0	–1.5	V
Drain-source ON resistance	$R_{DS(on)}$	$I_D = -0.5$ A, $V_{GS} = -4.0$ V		300	420	mΩ
		$I_D = -0.5$ A, $V_{GS} = -2.5$ V		420	560	
Forward transfer admittance	$\lvert Y_{fs} \rvert$	$I_D = -0.5$ A, $V_{DS} = -10$ V	1.0	2.0		S
Short-circuit input capacitance (Common source)	C_{iss}	$V_{DS} = -10$ V, $V_{GS} = 0$, f = 1 MHz		80		pF
Short-circuit output capacitance (Common source)	C_{oss}			12		pF
Reverse transfer capacitance (Common source)	C_{rss}			12		pF
Turn-on delay time *	$t_{d(on)}$	$V_{DD} = -15$ V, $V_{GS} = -4.0$ V, $I_D = -0.5$ A		12		ns
Rise time *	t_r			6		ns
Turn-off delay time *	$t_{d(off)}$			17		ns
Fall time *	t_f			10		ns

Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

2. *: t_{on} , t_{off} measurement circuit



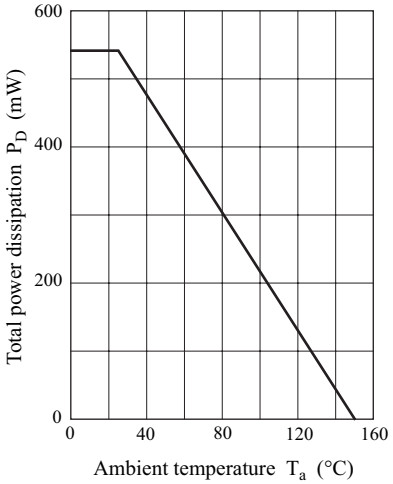
• SBD

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Forward voltage	V_F	$I_F = 500$ mA			0.42	V
		$I_F = 700$ mA			0.45	V
Reverse current	I_R	$V_R = 6$ V			90	μA
		$V_R = 15$ V			250	μA

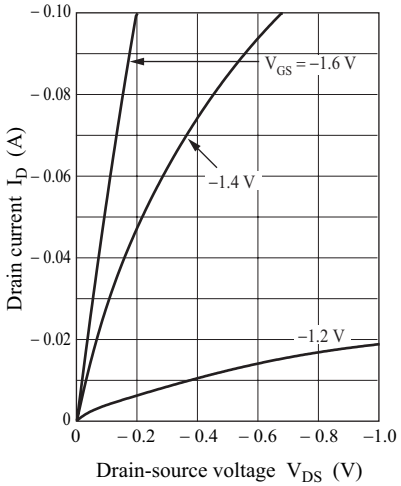
Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7031 measuring methods for diodes.

Characteristics charts of FET

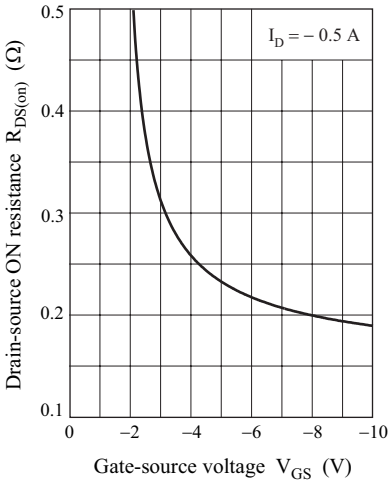
P_D — T_a



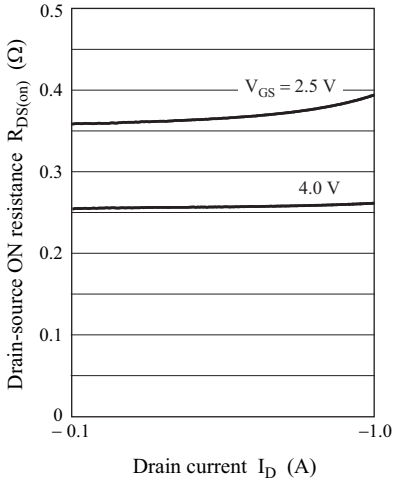
I_D — V_{DS}



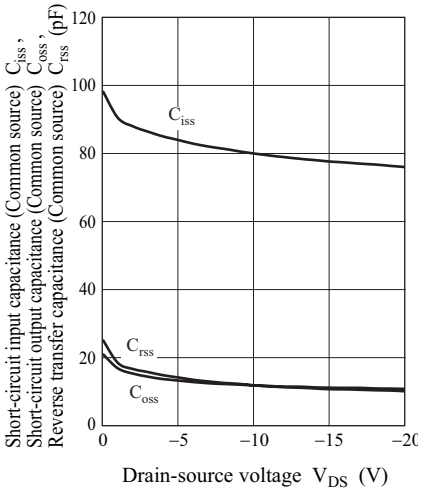
$R_{DS(on)}$ — V_{GS}



$R_{DS(on)}$ — I_D

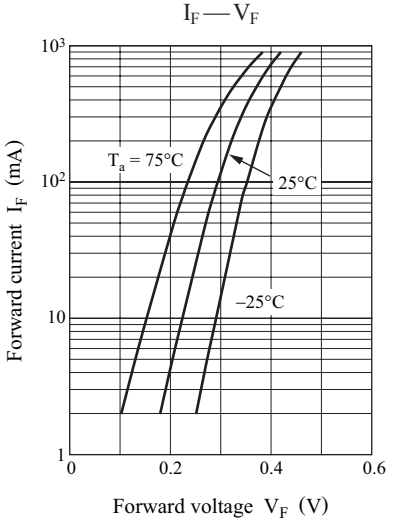


C_X — V_{DS}

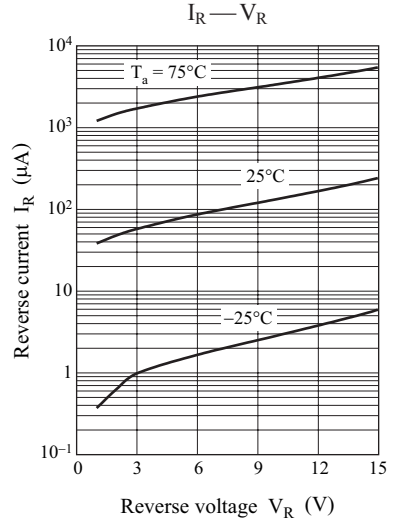


Characteristics charts of SBD

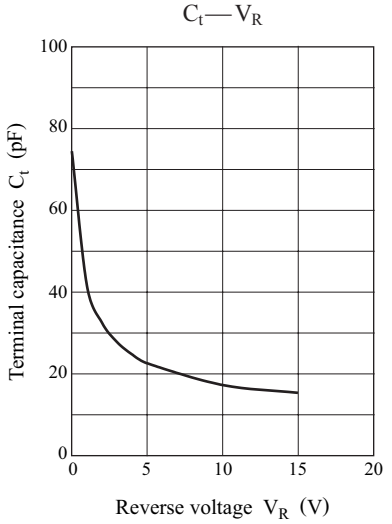
I_F — V_F



I_R — V_R

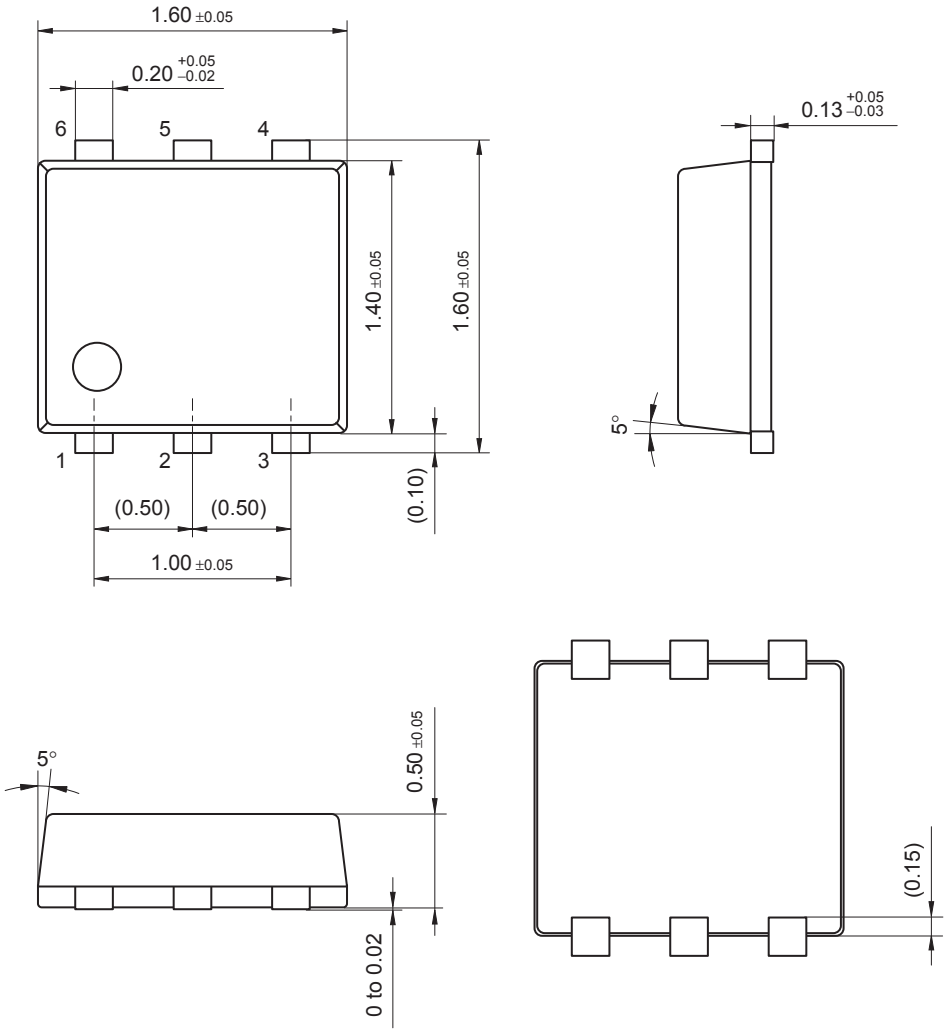


C_t — V_R



WSSMini6-F1

Unit: mm



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